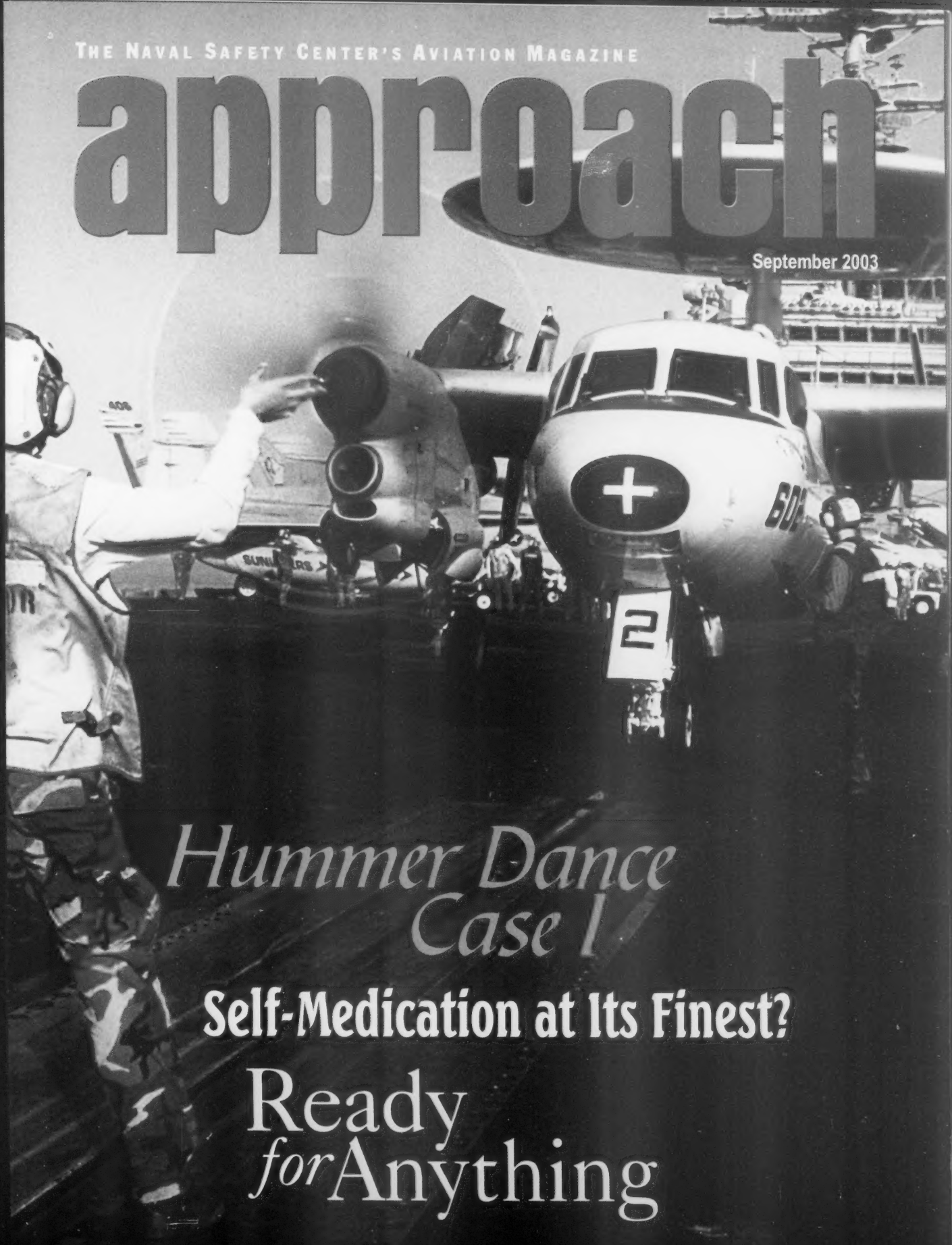
THE NAVAL SAFETY CENTER'S AVIATION MAGAZINE

approach

September 2003



Hummer Dance Case I

Self-Medication at Its Finest?

Ready *for* Anything

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The Naval Safety Center's Aviation Magazine

September 2003 **Volume 48 No. 9**

On the cover An E-2C Hawkeye from VAW-125 is directed to cat 1 on the flight deck of USS *George Washington* (CVN 73). Photo by PH3 Carrie Anne Gonzalez

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Mission Statement

Mishaps waste our time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. Mishaps ruin equipment and weapons. They diminish our readiness.

This magazine's goal is to help make sure that personnel can devote their time and energy to the mission, and that any losses are due to enemy action, not to our own errors, shortcuts or failure to manage risk.

We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is hazardous enough; the time to learn to do a job right is before combat starts.

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Features

Photo by Matthew J. Thomas

Departments

September Thanks

Thanks for helping with this issue...

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LCdr. Scott Anderson, VFA-147
Ltjg. Lena Buettner, HSL-48
Lt. Chris Artis, VP-45
Lt. Chris Lovelace, VAQ-134
AZ1 Richard Wright, VQ-4
LCdr. Thomas Cawley, VAW-113
LCdr. Tom Davis, VS-29
LCdr. Doug Verissimo, VFA-34

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Photo by Matthew J. Thomas

Ready *for* Anything

By Lt. Ghislaine Stonaker

Have you ever heard the expression, "You have to be ready for anything, all the time"? Have you ever had a flight that wasn't anything like you had anticipated or briefed?

I had one of those flights. I no longer take anything for granted, and I try to be ready for anything.

I was underway for the first time in my naval-aviation career, on a *Spruance*-class destroyer, as a helicopter second pilot on an SH-60B. We completed week-one work-ups, and returned to Norfolk to brief for an exercise: a combined sinkex off the Virginia coast.

Many assets would be involved in the exercise, including U.S. and U.K. ships, submarines, and multiple aircraft. The exercise would be a great opportunity for our detachment because we were scheduled to shoot a Penguin missile—a rare opportunity for LAMPS. We also would provide range-clearance services and would drop sonobouys for battle-damage assessment (BDA).

My OinC and I had prepared for months for the missile shoot. We were to simultaneously launch a Penguin with an aircraft from another detachment. Back in Mayport, the crews had practiced the shoot together. The scenario had been well thought out and practiced many times. We were prepared for all the problems associated with the missile and its systems, and we felt ready. However, we had no idea what was in store for us.

Our crew—the OinC (the PNAC), two aircrewmen, and myself (the PAC)—were up early for a 0300 brief and 0500 takeoff. The mission of our first bag was to make sure the range, which only was a few miles away from most of the involved ships, was clear of all surface contacts and marine life. The targets were the decommissioned *Wainwright* and two old berthing barges. The first shots of the exercise had been fired the previous day, and we provided FLIR and visual BDA. Our final check made sure the range was clear of all marine mammals and range foulers.

We headed back to mom for a hot pump. After refueling, we took off, completed our after-takeoff checks, and started the missile-firing checklist.

The first shooter of the day, a British Lynx helicopter, was finishing on the range; we were scheduled second. We listened to their calls over the radio, and they had a successful shoot. Our time quickly was approaching, and we felt ready to go.

While orbiting south of our ingress point, we heard over the radio, "Mayday. Mayday. Hotel Zulu, this is Kingfisher. Dual-engine failure. Going in!"

It was 0740. The boss and I gave each other a look I never will forget, and, at the same time, I started to turn the helo 180 degrees away from the range. He made sure the missile was safed. The range controller gave us the last known range and bearing of Kingfisher from our position, and I rolled out as directed on a heading of 210

Photo by Matthew J. Thomas

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degrees. The weather was marginal, with lots of haze, but I saw a spot on the water that was different from the rest. I told the crew what I saw, never took my eyes off it, and headed straight for the spot. By this time, the PNAC had broken out the SAR-briefing checklist, and, in a matter of seconds, our mission had changed.

Our crewmen in the back had no rescue-swimmer gear because we already were weight-limited because of the missile, buoys, and a crew of four. However, we did have the rescue strop, and we were standing by with the rescue hoist. As we got closer to the spot, I descended, and we saw an oil slick and debris coming to the surface. A few seconds later, boss and I saw something orange in the water. As we approached, we could tell it was the reflective piece of a survival vest, and, in the vest, was a survivor.

I brought the helo down to 80 feet, and the boss engaged the automatic hover. It was 0748. He turned off my radios, and he did all the external talking.

I listened to my aircrewman as he conned me over the survivor, "Easy right, easy forward, on top, hoist going down, survivor swimming over, survivor wrapping strop around himself, survivor giving thumbs up, hoist coming up, survivor clear of water, survivor halfway up, survivor approaching cabin door, survivor in helo, cabin door closed, clear for forward flight." The time was 0753.

I hit the auto depart twice for a manual departure and received vectors to a British frigate, which was the downed Lynx's own ship. She had been closing our position since the first distress call. We checked in with the frigate, made sure her winds were within our approach envelope, and landed at 0757. They had a medical officer standing by to assist with the survivor. After the survivor was escorted out of the helo, we were on our way.

We made our call to the controller on the frigate at 0800, "Ops normal, four souls on board, 2+45."

The elapsed time from the Mayday call to taking off from the British ship only was 20 minutes but 20 minutes we never will forget. Never in a million years did we think we would be performing a search and rescue when we briefed earlier that morning; although, as always, it was covered as a contingency plan in our NATOPS brief. All we could think about was being the first crew in over six years to successfully shoot a Penguin missile on the East Coast.

We were prepared for anything, and, because of that, we saved the life of a British sailor. Once the SAR effort was complete, and the sinkex had resumed, our crew day had expired. Another crew from our detachment jumped in and successfully shot the missile. Even though they were the backup crew, they prepared as if they were going to take the shot. They started their day anticipating watching our shot from CIC but wound up strapping in and performing a flawless mission. Are you ready for anything?

Lt. Stonaker flies with HSL-44 Det 1.

Photo by PH3 Alex C. Wittle. Modified.

Joker 205 Basket Hit

By Lt. Jim Hays

The XO and I briefed a bomb and strafe hop for a COMPTUEX flight at a range on the North Carolina coast. We would launch from the CVN, get a bit of front-side tanking, and proceed on our mission. We were loaded with two Mk-82 inerts, plus 200 rounds of 20mm.

Our carrier launch was a standard Case I departure, and we climbed to 20,000 feet and joined on the Omega tanker (a modified Boeing 707). After the XO tanked, it was my turn, and I was cleared to the precontact position.

It was a beautiful, clear day, with no turbulence at altitude. Although I was a little rusty, tanking off the Omega is a dream come true. The Omega is incredibly easy to tank from, with its soft basket and long centerline hose. I was cleared to contact and advanced the throttles to gain three to five knots of closure. As I approached the basket, I was aimed too high and right. I tried to be smooth and backed the throttles to mid-range, but I wasn't quick enough to avoid the basket slapping the right fuselage. The basket moved down and underneath my jet until it went out of sight. I still was moving aft and away as the basket completed a full, yet slow, circle around the nose of my aircraft. I saw nothing out of the ordinary, so I reengaged the hose, received my fuel, and disengaged without incident. We exited the tanker and pressed on to the range.

Once we arrived on the range, the weather conditions were less than optimal for high-angle bombing. We flexed to a level lay down to get rid of the ordnance on a half-sunken-ship target, then we transitioned to the strafe pattern. We worked a 15-degree gun pattern, with mild maneuvering and no more than 5 Gs. After we strafed the target, we rendezvoused off-target, below the cloud layer, and headed to the USS *George Washington* (CVN 73) for our OK 3-wires.

After shutdown, maintenance saw the lower IFF antenna missing. After a cursory inspection of the surrounding area, the plane captain was told to dive the ducts to investigate for damage. Much to the amazement of everyone, the complete missing portion of the lower antenna was found intact—wedged flat against the port engine's inlet-guide vanes. The antenna apparently had remained fixed in that position for over an hour in-flight, held in place by the airstream. I had no airborne indications of the problem.

Obviously, the "what ifs" are eye-opening. Had the six-inch antenna continued its travels and FODed the engine, I most likely would have had a catastrophic engine failure. A borescope inspection on the port engine found nothing negative. Aircraft 205 was placed back in FMC status.

Watch your closure, and don't sacrifice a basket hit, trying to be too smooth. Tell maintenance as soon as possible after a basket slap, even if you don't think there is any damage.

Lt. Hays flies with VFA-34.

Forrest Gump Safety Investigations

By Cdr. Dave Bean

Investigating a mishap can be a bit like Forrest Gump's box of chocolates: You never know what you'll get. For example, take a recent refueling mishap by one of our helicopter crews.

Two days before a major afloat exercise, I received an early evening call, telling me a simple evolution had ended with a ruptured fuel cell in one of our HH-60H aircraft—a low-density, high-demand airframe. The minor fuel spill was contained, and nobody was hurt, but damage to the cell appeared significant. Surely this mishap would be attributable to something other than human factors, I thought; our qualified crew was following directions to the letter and could not have caused the mishap. The investigation turned up some interesting data for our helo community.

Several line-division personnel, each a qualified plane captain, had refueled the aircraft in preparation for a flight to the ship two days later. All appropriate, traditional, safety measures were taken to ensure a smooth evolution: An adequate number of personnel, properly trained, followed approved checklist procedures. As the fuel cells neared capacity, the refuel crew heard a distinct bang and saw fuel leaking from the drain vents underneath the fuselage. Coincident with the noise, the maintainer handling the hose saw an immediate jump in cell pressure on the refueling-panel gauge. Fueling was stopped, and the investigation began.

As I initially had expected and hoped, the mishap investigation found a serious material flaw that led to this ground mishap. The proximate causal factor was a failed T-fitting in the main fuel-cell plumbing, which caused a malfunction of the system's high-level, shutoff-safety feature. Without that shutoff capability, the cell continued to fill with fuel, until it literally burst out of the Kevlar box surrounding it.

A unique set of circumstances had combined to cause the mishap, despite the ground crew's close adherence to written procedures. Perhaps, the more interesting find was the deficient checklist employed by the maintainers during the refueling procedure.

In the HH-60H, the digital fuel gauge and the fuel tableau on the control-display unit display fuel quantity in pounds. However, the checklist used by all HS maintenance personnel to fuel aircraft provides only fuel-tank capacity in gallons. We have little guidance regarding the symptoms of inappropriate automatic fueling, except to direct that fueling be stopped in the event of cell overpressure, as indicated

Photo-composite

by the gauge on the refueling panel. The procedure requires the presence of a cockpit observer, whose only mission is to announce when the desired total is reached.

The manual gives no information concerning fill rates, quantities, and their relationship to a malfunctioning fuel system. The manual also gives no direction to monitor for such symptoms. Though the aircraft NATOPS makes passing reference to the symptoms of stuck fuel-cell valves in the helicopter in-flight refueling procedures, it provides no such caution in the servicing section.

Business as usual, even when done strictly by the book, is not necessarily the safest way of operating. In this case, a "routine" refueling procedure, conducted by the book, still caused almost $100,000 damage to a helo. Had the checklist provided more thorough and relevant data regarding system operation and characteristics, the cockpit monitor might have averted the rupture. How many of his predecessors had noted the unit-of-measure discrepancy and failed to act on it?

A unique set of circumstances had combined to cause the mishap, despite the ground crew's close adherence to written procedures.

How many pilots have seen a related discrepancy in their NATOPS manual and failed to call for change? We were fortunate to escape this mishap with only bruised egos. The entire episode points out the tremendous value in questioning the "routine" and cultivating a command climate that encourages healthy circumspection.

Cdr. Bean is the commanding officer of HS-6.

Forrest Gump *and* Safety Investigations

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Max Hours in Sheik Isa, the Go Pill Experience

By Lt. Norak Chhieng

We were winding up our final weeks out of Prince Sultan Air Base (PSAB) when we were tasked to cover a boat squadron in the Persian Gulf. Although the det only was a week long, many of us were thrilled to beat-feet out of this desolate, desert prison.

I was completing my fourth overseas tour as a squadron flight doc, content everyone was leaving with all their body parts intact. This tour also was the first time I had gotten intimately familiar with what the Air Force calls the Go and No-Go pills. My first exposure to these amusingly labeled drugs was in Turkey when one of my Air Force guys approached me after our 22-hour trip across the pond and asked for a No-Go pill. Believing he was out of his mind and was making this up, I blew him off. Little did I know these drugs had proven themselves as respectable as an aeromedical upchit.

We were operating out of Sheik Isa Air Base, Bahrain, a wonderful emerald island in our minds, especially after spending our days and nights alongside nocturnal camel spiders, despicable sand storms, and relentless brown-outs. Also occupying the backs of our minds were the uncomfortable thoughts that our presence here was dangerous, dumb, and different. ORM has become so stubbornly engrained in me during my short time in the service, it is a natural way of thinking and conducting business.

Although no one objected to being at Sheik Isa Air Base, many reasons raised our pucker factor. As we wound down a long deployment in the boring desert of Saudi Arabia, the change of scenery was welcomed, but we did long for the familiar environment and faces back home. Morale was a big factor, especially since most of the VAQ-134 Garudas already had hopped on a

plane heading the opposite direction. However, I think 9-11 still struck such a resounding chord that our energy and dedication remained strong. Operating in an unfamiliar, foreign environment was, for some of us, also a challenge.

Thanks to the Air Force, we were fortunate to accomplish many things because of the inroads they had made. The heat was not new to us, and, since Sheik Isa Air Base sits on the water's edge, the sea breeze kept humidity to a minimum. With these conditions, I kept monitoring the mental and physiologic state of the aircrew and maintenance workers, good and bad.

The maintainers worked in shifts, so adequate rest was not a huge factor. The temperature frequently tipped over 100 F, and work crews rotated from the line where the planes were parked. Aircraft shades weren't available, and the only sure way to prevent heat stress was to drink plenty of water and to control the AC environment in office spaces. Unfortunately, a few maintainers sustained minor burns from accidental contact with hot, metal, aircraft parts. Plenty of thick-cotton gloves, long sleeves, and a good dose of attention-to-detail helped fix that problem.

Crew rest, on the other hand, was a challenge because flights were long, unpredictable, and available personnel were at a premium. As at PSAB, the aircrew sparingly used the No-Go pill, Ambien (a mild sedative), to help acclimate them to abrupt changes in flight schedule and circadian patterns. Nightly doses of 10-mg Ambien tablets were used for insomnia. We gave the tablets individually so side effects or the potential for abuse could be monitored closely. Aircrew who used Ambien were grounded for a six-hour period, from ingestion to brief time.

Aircrew successfully ground-tested with the Go pill, dextroamphetamine, carried two, five-mg pills, in clearly labeled plastic bags during all their flights.

Dextroamphetamine, or speed, is a dose-dependent stimulant with a proven history by the Air Force when used appropriately. This Go pill increases alertness and improves safety of flight when used during sustained-flight operations. Appropriate use means you don't show up to the brief tired and pop a pill to stay awake. It is used only as a last resort, after wheels are in the well, and all fatigue-management skills have been exhausted.

Because it is classified as a Class II drug, dextroamphetamine has a high potential for addiction and abuse. You can see why I was reluctant to have our guys carry these pills around. Most of the front office also wasn't very fond of having these so-called, artificial-performance enhancers floating around the ready room, not to mention the cockpit. After all, the Navy never has, in its 200-year history, relied on medication to help its pilots with their missions. Why start now? The fuel for this argument came during OSW when the Air Force Wing directive required all air assets operating in the AOR to be ground-tested and to carry the Go pill in-flight.

After the skipper endorsed the pills, I began to ground-test my guys. Surprisingly, it went smoothly. Every effort was made to make sure clear instructions were given and documented, including that the testing was voluntary. However, to carry the pill in-flight, ground-testing was mandatory, which put us in a political Catch-22. Fortunately, my guys spared me the heartache and consented to the ground tests. After all, there was some logic to the decision.

Grounding was for a 24-hour period and included testing two small doses (five mg) of dextroamphetamine, four hours apart. Most of us did not feel a thing, not even the expected buzz typical of most stimulants. The real test was yet to come.

On May 11, 2002, at 0700, one of my pilots just had finished debriefing a flight into Afghanistan. He was exhilarated at successfully completing a mission we had waited for so long. It was also the only mission flown on the last day of our stay. I was even more excited to see he had used a Go pill on RTB. He decided to take one pill after complaining of "degraded alertness

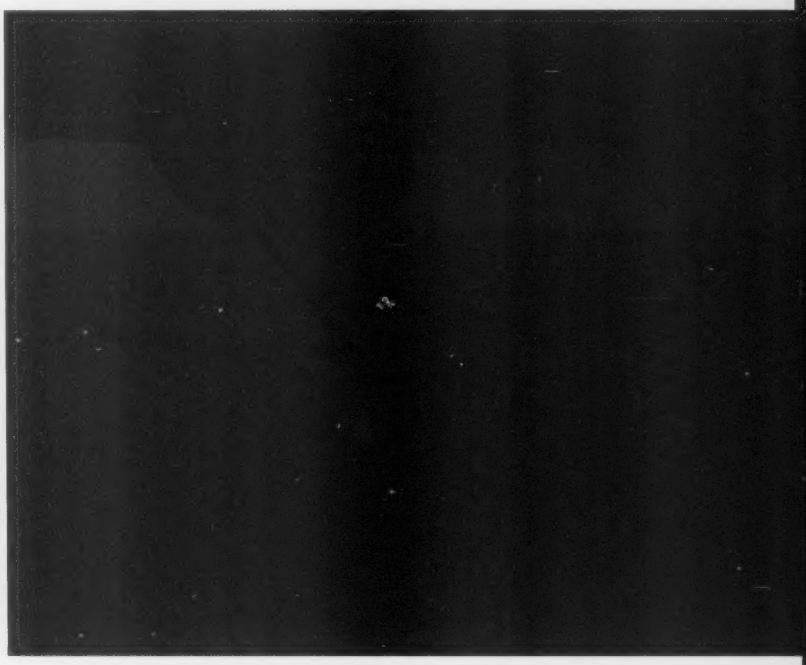
from the extended-transit time to and from the operating area."

It wasn't until the second pill, taken 15 minutes later, while in the last 3.5 hours of an 8.5-hour mission, that he noticed his fatigue lessened. Other contributing factors to his fatigue, but not already mentioned, include: first mission into the operating area, landing and taking off from an unfamiliar airfield, and multiple night-tanking evolutions. The Go pill worked as advertised. All the time and hard work invested in the program eventually had paid off—what a great moment!

The rest of the Garudas finally made it home. Although glad to collect all the unused drugs, I also was satisfied the Go pills made an important difference in our aviators' performance. More specifically, it improved safety of flight by increasing situational awareness. ORM principles tell us to accept risk when the benefit exceeds cost. With careful ground-testing, close monitoring, and careful instruction, any unnecessary or undue risk was significantly reduced.

All levels of power, from the surgeon general of the Navy to the skipper and air wing commander, carefully weighed and endorsed these risks. There is no greater reward than to bring a fellow aviator home safely.

Lt. Chhieng is the VAQ-134 flight surgeon.



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This article reflects how medical science can assist operational readiness of the fleet, but we must remember the only real treatment for fatigue is a good solid eight hours of uninterrupted, unmedicated sleep. Medications can help in a time of crisis but never should be used as a routine substitute for sleep. Good ORM and mission planning are essential to ensure adequate crew rest.

OPNAV 3710.7S-Chapter 8.3.3, Performance Maintenance During Continuous and Sustained Operations, refers commanding officers and flight surgeons to NAVMED P-6410 (01 Jan 2000). This Naval Medical Command publication provides excellent tools for the management of the issues described in this article. This publication can be downloaded from the BuMed website: http://navymedicine.med.navy.mil/instructions/directives.

CNAF instruction 6410.1 provides additional guidance on this subject. The Naval Safety Center aeromedical team also has produced a PowerPoint presentation available at: http://safetycenter.navy.mil/aviation/aeromedical/default.

—Capt. Nicholas Webster, M.D., MPH, aeromedical analyst, Naval Safety Center.

Clean Up, Join Up, and Shut Up

By LCdr. Halsey Keats

Fallon, Nevada—not exactly paradise but, nonetheless, a work-up location greatly anticipated by carrier aviators. Fallon offers advanced air-wing training, snowboarding and gambling on the weekends, and, most importantly, some of the best and least restrictive VFR flying the nation has to offer.

It was the last day of work-ups for our Viking squadron, and many of us were eager to hit the road back to San Diego. I was part of a good-deal, three-plane, low-level bombing hop. The weather-guessers had forecasted possible late-afternoon dust storms and light snow showers. Around brief

Phase one of the flight would take us along a low-level route, transiting from south to north of Fallon.

time, however, the weather was more or less CAVU, with slightly windy conditions.

Phase one of the flight would take us along a low-level route, transiting from south to north of Fallon. The flight to the route was uneventful but bumpy.

Lead broke up the flight at point alpha, and we proceeded along the route as singles. Our first indication of bad weather conditions came halfway through the route, when lead reported dust storms and recommended we climb. The altitude change was warranted as we soon found ourselves in near-IFR conditions.

My COTAC and I worried that our off-route rendezvous point still might be IFR. The join-up, however, turned out to be uneventful.

The plan was to proceed to W-16 for bombing practice. All we could see was dust. A quick check with the range personnel confirmed the bombing range was enveloped in a dust storm. Lead aborted the bombing portion of the flight, and the division headed back to Fallon.

With field visibility at one mile in blowing dust, the planned fan break also was cancelled. Lead broke up the flight by detaching Dash-3 and instructing them to maintain visual separation until another squawk was received.

Simultaneously, because of the poor weather on the range, the advance phase strike of 20 aircraft checked in early with the controller. Approach did not understand that Dash-3 already had detached and was "hanging out" VFR near our section. After a long exchange with approach, Dash-3 was given a squawk and vectored away from the rest of the flight.

Lead then worked with approach to break up the section into singles. Lead got a separate squawk for our jet. We made a right turn, 90 degrees off present heading, for separation. We were instructed to descend to 1,000 feet below lead. During my turn, I also saw Dash-1 turn and descend.

Right away, I was IMC with our former lead somewhere off my left wing. I told Dash-1, on squadron-tactical frequency, the turn and descent was for our jet only. At the same time, approach recognized the error and instructed Dash-1 to return to his previous course. With lead clear, I was switched to a discrete frequency for the PAR.

Fifteen minutes had elapsed since we started the division break up. During this time, the strikers had reached the approach corridor, and I was vectored several times across the final approach course for separation from the low-state aircraft.

My first attempt to land was unsuccessful because our interval failed to report "clear of the duty" in time. Field visibility was poor enough tower no longer could see aircraft exiting the runway. This visibility oversight would cost me another 20 minutes airborne in rapidly deteriorating conditions. I was vectored downwind and instructed to climb to 7,000 feet. During the climb, I reentered IMC conditions. At 15 miles north of the field, I was given a turn to base leg.

As I neared the final approach course, my COTAC began pimping approach control for a turn; approach did not reply. Several more attempts also failed. My COTAC alerted me that, because of the extended downwind, our base leg was taking us perilously close to nearby mountains. I climbed 500 feet in IMC to clear the mountains, while my COTAC cycled through several frequencies.

Finally, my COTAC found approach on an alternate frequency. Approach quickly gave me a 180-degree turn back toward final. The controller was overloaded with numerous low-state Hornets who had been waved off because of weather. I then participated in a controller vector-ex, while zigzagging back and forth across final. My COTAC began to plan a bingo back to North Island. If you gotta go, you might as well go home.

After an eternity, I was switched to a final controller, and we turned into the heart of the dust storm. Visibility was reported at less than one-sixteenth mile; being dual piloted, we continued. Several times, approach lost and then regained the PAR radar—another bonus of blowing dust. We were cleared to land on the left.

The blowing dust was accompanied by gusting winds. At one mile, my AOA pegged. I immediately placed the throttles at mil power and stuffed the nose. Before I could communicate

what was going on, the jet recovered and was back to a nearly on-speed state. I selected take-off flaps to get a better engine response and increased waveoff capability.

At decision height, I picked up the runway, and the controller cleared us to proceed visually. As the runway became clearer, we saw another runway to the left and adjusted.

At 100 feet, the controller called, "Dragon 704, you appear to be lined up for the right runway."

A glance to the left revealed yet another runway. I made a full-stick deflection and finally lined up on the left. The roll out and taxi back was uneventful.

The debrief provided numerous lessons learned that could have made the flight less memorable for me and easier for the low-state Hornets. First, either lead or the controller should break up a flight—do not mix and match. Lead should have detached Dash-2 and -3, providing altitude separation at the rendezvous point. Each aircraft would have contacted approach on their own to get a squawk and coordinated their own arrival. Lead also could have allowed approach to break up the entire flight by assigning squawks and giving vectors for separation.

While we were on a bombing mission, two aircraft in my flight had refueling stores. We landed with plenty of gas, while our air-wing brethren approached bingo. Approach was overwhelmed with simultaneous handling of numerous low-state aircraft. In retrospect, we should have set up a tanker stack north of Fallon. Working with the strike lead, we could have split up the strike package, keeping half attached to us, while the remainder landed.

We should have gone around one more time. The AOA excursion and the lineup on the wrong runway forced me to make large in-close corrections with gusty winds—a recipe for a stall. We had plenty of gas to go around numerous times before we needed to bingo.

In case you were wondering, the first runway I lined up on was the CALA (combat-aircraft-landing area).

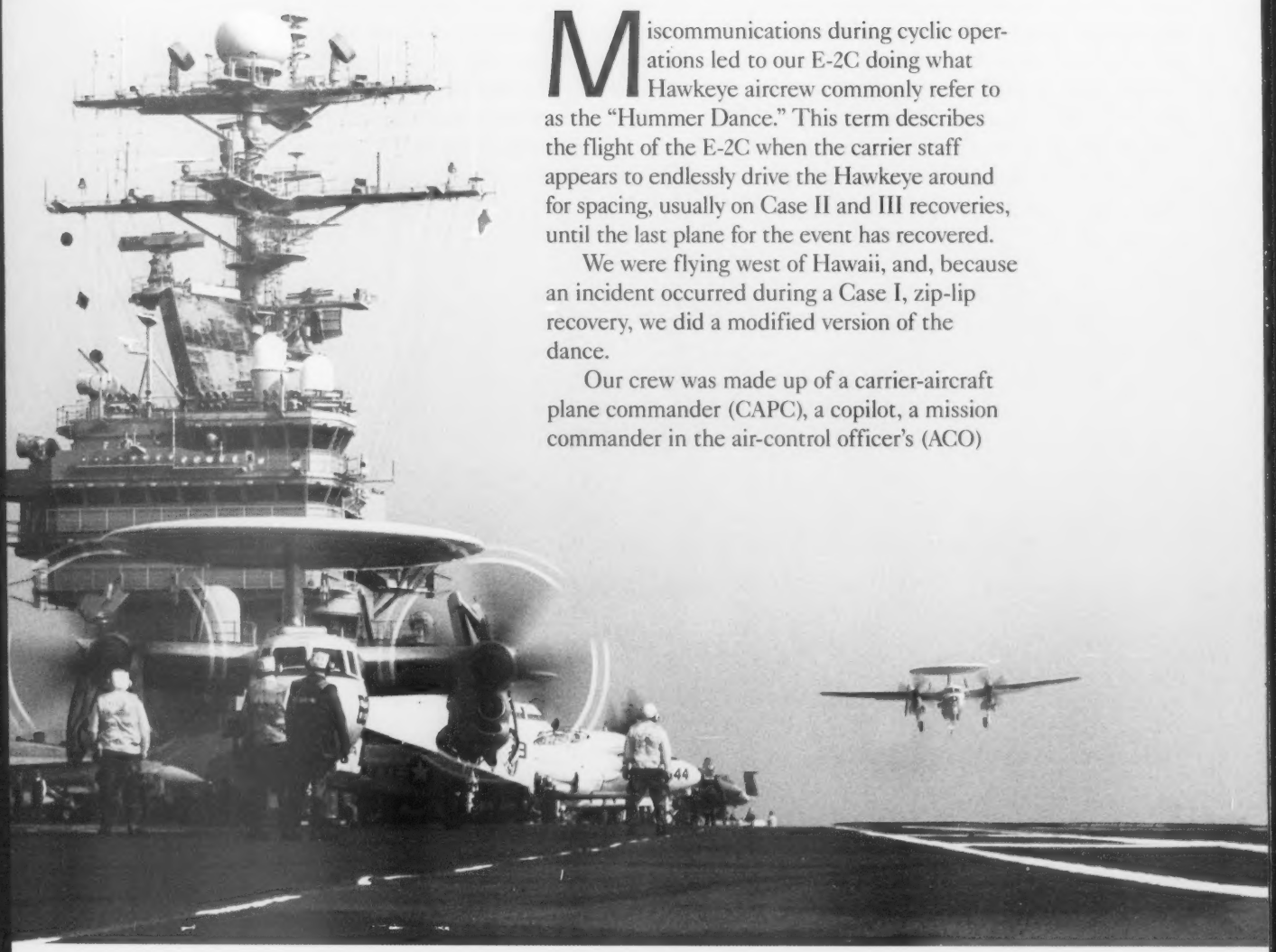
LCdr. Keats flies with VS-29.

Lead aborted the bombing portion of the flight, and the division headed back to Fallon.

Photo by Cdr. Chris Baldreanu, Medford

Hummer Dance Case I

By Ltjg. Vince Nguyen



Miscommunications during cyclic operations led to our E-2C doing what Hawkeye aircrew commonly refer to as the "Hummer Dance." This term describes the flight of the E-2C when the carrier staff appears to endlessly drive the Hawkeye around for spacing, usually on Case II and III recoveries, until the last plane for the event has recovered.

We were flying west of Hawaii, and, because an incident occurred during a Case I, zip-lip recovery, we did a modified version of the dance.

Our crew was made up of a carrier-aircraft plane commander (CAPC), a copilot, a mission commander in the air-control officer's (ACO)

seat, a mission commander as combat-information-center officer (CICO), and a nugget radar operator (RO). We were scheduled for a double-cycle, and the weather conditions were day VFR.

During the flight, the CICO decided to extend the trailing-wire antenna to use the HF-1 radio. After confirming wire speed, the CICO pushed the antenna out (ANT OUT) button. Immediately after pressing the button, a low-torque light illuminated. If a low-torque light comes on, two possible outcomes exist: If the position of the wire is unknown, simultaneously push the ANT OUT and ANT IN button to chop the wire, so it will not be attached to the aircraft upon landing; if the drogue is stuck, proceed with recovery. In either case, notify landing area of a possible missile hazard.

The CICO knew two S-3 Vikings were conducting unit-level training to the west of our current position. The CICO called the S-3s on tactical frequency and had one of them close us to visually inspect the aircraft. The Viking crew was briefed en route on the condition of our aircraft and what to look for. The Viking crew verified the trailing-wire antenna was in and the drogue seated. Because the position of the drogue was confirmed, the wire was not chopped. The Viking crew broke away from us and continued their assigned tasking.

The CAPC talked with the CICO and decided to call marshal and request a straight-in approach, rather than the carrier break. The CAPC explained the situation to marshal and clarified he was not declaring an emergency. Marshal's instructions were to circle overhead mother at 1,000 feet and to expect to be first on the recovery. The CAPC again explained to marshal he was not declaring an emergency, and the straight-in approach was a precautionary measure with an unsafe wire indication. Marshal's instructions remained the same.

In the meantime, an S-3 pilot requested a straight-in approach because of flight-control problems. Marshal gave the Viking instructions to circle overhead mother at 2,000 feet and to expect to be second on the recovery after us. The CAPC again called marshal to confirm we were to be first in the recovery, and marshal again verified the plan.

Tower then had the S-3 circle 10 miles east of the carrier at 2,000 feet. This call made sense to our E-2C crew, because the overhead stack starts at 2,000 feet, and the launch was complete. The CAPC called tower and asked for instructions, and tower said to continue circling at 1,000 feet. A few minutes later, the CAPC and copilot saw a pair of Tomcats in the carrier break at 800 feet.

The CAPC called tower to confirm we were to recover first. Tower responded, "Hawkeye, you are dead last. Circle 10 miles east of the ship at 1,000 feet."

The current picture had aircraft in the pattern, aircraft in the carrier break, and our E-2C trying to get out of the way.

The CAPC headed east of the carrier to avoid recovering aircraft. We were six miles from the carrier when tower called the Viking, circling at 2,000 feet, and told them to commence their approach. Since we couldn't see the Viking, the CAPC decided to break zip-lip, call the Viking, and let them know we were at 1,000 feet on his approach path and not to descend without a visual. The Viking got a tally at six miles from the ship and started to descend at five miles.

All aircraft safely recovered. However, zip-lip procedures needed to be broken for safety of flight. Marshal and tower obviously were not communicating about the two aircraft needing straight-in approaches. Tower should have called the Hawkeye to get out of the way of aircraft in the carrier break at 800 feet. If the Viking was to recover before us, then we should have been marshaled at a higher altitude.

Ltjg. Nguyen flies with VAW-113.

Was That Oil or Electrical Fumes?

By Lt. Molly Boron

Newly qualified as a PPC, I took my crew to the AUTEC range near Nassau for a TorpEx event. We headed down the Florida coast and eastward to the range.

As we descended to on-station, our No. 2 engine-driven compressor (EDC) dropped to less than five inches differential—without giving us a press-low annunciator light. A complete loss of differential could have indicated a sheared quill shaft, but the compressor still provided air for our AC-pressurization system.

The EDC problem wasn't a huge issue at the time, and we pressed on, focused on our mission. After a successful TorpEx, we departed the range. The flight engineers (FE) and I monitored the cabin pressure as we climbed toward FL200. In the P-3, cabin pressure is set with a formula, and, normally, the pressurization rate is an automatic function. As fate would have it, our No. 3 EDC proved also to be weak. Unable to hold cabin altitude—which initially rose to 6,700 feet, then fluctuated between 4,300 and 5,700 feet—we requested a descent. We tried manually to control our pressurization, but we couldn't.

Nearing Vero Beach, Fla., my 2P asked if anyone smelled something like burning oil; no one on the crew did. My TACCO and I decided to go ahead and run the fire-of-unknown-origin (FOUO) checklist anyway. The crew jumped into action and carried out their assigned duties of opening equipment-bay doors and pulling away soft panels, searching for a source of smoke and/or fumes. It wasn't long before they confirmed both smoke and fumes, with an apparently electrical source.

The flight engineer left the flight station to check the malfunctioning outflow valve in the back of the aircraft, and the off-duty FE took his place. Upon returning, the senior FE said the outflow valve was hot, and the No. 3 engine nacelle was covered in oil. Could we have smoke and fumes coming from two different sources?

Normal procedure for a P-3 aircrew, when looking for the source of

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smoke and/or fumes, is to make two complete sweeps of their area before the flight-station crew secures electrical buses. I already had directed flight-station personnel to don their smoke masks, and the TACCO made sure the rest of the crew also had on their masks. The source was estimated to be somewhere between the flight station and the radar-operator station, and we secured our main AC bus A. The TACCO did a great job of informing me of the crew's progress and status. Unfortunately, the crew still could not pinpoint the source.

The TACCO asked for the smoke-and-fume elimination checklist to reduce the build up of smoke throughout the tube. While running the checklist, I tried to identify what could be on fire. The TACCO then told me he didn't feel good about the situation, which I misinterpreted as his feeling sick.

With ram air clearing the smoke and fumes, I declared an emergency with Daytona approach. We received vectors to Patrick AFB, which was 10 miles behind us, and prepared the cabin for landing. We landed with our smoke masks on. Once clear of the runway, we executed our procedures for ground evacuation.

Little did I realize at the time, but our pressurization-problem troubleshooting actually had helped us: We were in a position to depressurize immediately and to make an expeditious approach. After three hours of troubleshooting on deck, we discovered the HF No. 1 radio-coupler fan was the source of our FOUO. It hadn't malfunctioned in flight, but the fan was hot enough to scorch a flight glove. We did have an oil leak on the No. 3 engine, but it was small enough not to register a loss in quantity. It turned out the oil leak, outflow valve, and EDC problems all were unrelated to the smoke and fumes.

This time was the first I had come across such a compound malfunction, and it certainly challenged our crew. This scenario reinforced several important lessons. It's better to be on deck wishing you were flying, than flying and wishing you were on deck. Also, the importance of CRM can't be stressed enough. There certainly were barriers to our communication and understanding: Conflicting information as to an oil versus electrical FOUO, misunderstanding the TACCO's statement about how he felt, trying to communicate while wearing smoke masks, and limiting initial mental troubleshooting to the EDCs, outflow valve, and No. 3 engine.

I defer to the very first thing I learned in flight school: Aviate, navigate and communicate. Knowing our divert fields through every phase of our flight, getting out all our checklists, and telling ATC of our intentions, kept us safe and quickly got us on deck. Overall, I was pleased with the way our crew performed, and every one of us learned valuable lessons on the complexity and dynamics of multi-crew aircraft malfunctions.

Lt. Boron flies with VP-45.

Will Your NATOPS Brief Work?

By Lt. Jason Dutcher

Navy pilots are introduced to the NATOPS brief in flight school. We memorize the required statements to make on each of the brief items. We expand our brief from there, as we learn our aircraft, how it responds, and how best to manage critical situations. A potential emergency I had during a work-up period gave me a reality check, and I've since changed how I brief engine malfunctions on takeoff.

Our flight to Pascagoula from Mayport for week-one work-ups was like other det transits: Our helicopter was heavy and stuffed with gear. Power available in our SH-60B was an issue because of our weight. Hover torque calculated out to around 96 percent, which meant the helicopter could get off the ground but with only a small power margin. Our first leg was uneventful, and we arrived at Tyndall AFB, our first stop, and got fuel.

We grabbed lunch at a local fast-food place before updating our flight plans and paying for the fuel. Flight calculations were checked again for the local weather and showed similar numbers. We also reviewed our NATOPS brief to consider if an engine failure occurred on takeoff—probably our most vulnerable point. The aircrewman would kick out the heaviest objects, and the flying pilot would call out "abort" or "wave off." We'd abort the takeoff if we had runway left and the engine failed, and wave off if we had sufficient airspeed to fly and no safe landing place in front of us. One word for quick, decisive action, and then we would follow that action.

All fueled and preflighted, the helicopter fired up like an old lawnmower with the same temp-pressure readings as before—looking good. We taxied and pulled up into a hover over the runway. Close to calculations, our hover torque bounced above 96 percent as we stabilized, but we had a long runway in front of us to build speed and ease into the climbout. We squeaked out 50 knots as we eased up through 100 feet, entering a safer regime of altitude and airspeed. We still had 2,000 feet of runway in front of us, and things looked good until the master-caution light lit, along with a No. 2 engine chip light. No. 2 was the high-time engine on the aircraft. As the non-flying pilot, I quickly checked for secondaries but found none.

The situation was not serious yet, but we still were heavy and not fast enough, and we quickly were running out of runway. Since the engine was functioning OK, I preferred to build up our airspeed and continue flying, instead of rushing an abort back to the runway with a heavy helicopter.

I thought of calling "wave off, wave off," as briefed to my copilot, but it suddenly seemed inappropriate and misleading. We just had an engine chip light, so, fearing the worst, I imagined he thought the call would imply we were out of runway, our engine was sputtering, and the trees ahead were calling to us. If he took this logic to the extreme, the next course of action might mean a radical dive to pick up airspeed so we could pop up over the trees. Another option would be to roll the helicopter into a high angle of bank to stay over the airfield and to avoid the trees.

We didn't have anything but the warning lights and I wanted to keep it that way. I said staying in the pattern would work fine—just keep it close to the runway and build up the airspeed. I also used hand gestures—like an aircraft—for added clarity.

He called tower, and tower asked if we wanted to do a 180 and land in the opposite direction because winds were light and variable. This plan seemed safe, and I liked the idea, but it meant we were aborting back to the runway—if we followed our brief. Should I say, "Yes, abort" after tower's suggestion, so my copilot knew I wanted to go along with this plan?

I knew that if I were in his spot and heard "abort," my heart probably would skip a beat or two. I'd think the engine had secondaries, and we probably wouldn't stay airborne much longer, so we'd better set up for an immediate single-engine-landing profile. Again, I didn't want to fabricate our emergency, so I slowly nodded we could do that profile and helped search for a taxiway through our turn where we could land. My copilot picked a long taxiway before we got all the way around to the runway. We set up for a nice single-engine profile, just in case we needed the extra safety margin. With a nice touchdown, the crisis was averted.

Where was the single-word "wave off" call? Why didn't we "fly as we had briefed"? Simple: the brief was wrong. Flying at slow speeds and having the ability to hover means we have far too many options and interpretations of these options available to us for one-word calls to be clear, except in limited cases. The abort or waveoff call alone doesn't answer questions about approach- or waveoff-pattern altitudes, airspeeds, a spot or a running landing, and the urgency of the problem. There are just too many questions to answer with a one-word call.

Instead, I now brief if we have an engine malfunction on takeoff, the flying pilot verbalizes what he is seeing and his intentions, in plain English. The nonflying pilot backs up on flight parameters, checks the gauges for secondaries, and revises the decision if necessary.

Could our engine have failed? It barely made it through week-one work-ups with several chip lights. The engine had its final "downing" chip light over the runway going home at the end of the week—after only a 10-minute flyoff.

An engine failure is obvious because of the engine winding down and loss of Nr. If the engine had failed on our earlier takeoff, we still had plenty of time to discuss how to use the remaining runway. If not, I would have taken the controls and made sure. Even that situation is handled better with a sentence or two, rather than a single-word response to the problem—the other pilot may be interpreting the situation differently than you. Now my brief more accurately reflects the reality of this type of emergency.

Lt. Dutcher flies with HSL-48.

We squeaked out 50 knots as we eased up through 100 feet, entering a safer regime of altitude and airspeed.

Photo by Matthew J. Thomas

Self-Medication

By LCdr. Bruce Hay

Here's the story of a friend who tempted the gods in preparation for a good-deal cross-country. My friend had arranged an all-JO flight back east for the Easter holiday, after an at-sea workup. During work-ups, he got a head cold that kept him from flying. If he couldn't make the flyoff from the boat detachment, he couldn't make the cross-country.

We repeatedly are told during flight training and physiology briefs, that we are not to self-medicate, even for a headache—no aspirin, no decongestants, no nothing. Every training-command safety stand-down includes a story of a student blowing his sinuses or eardrums while trying to hack it. Aviators almost become numb from the endless stories of pain, suffering and downtime. You would think savvy fleet aviators would be the last group of folks to tempt fate and fly while on medication, especially medication not prescribed by the flight doctor. Well, that would make for a boring *Approach* article, wouldn't it?

A few days before the flyoff, my friend decided to take matters into his own hands. He supplemented the medications the flight surgeon had given him with a collection of sundry, witch-doctor tricks. If you've ever read the label on a bottle of Sudafed, you know it says to take a dose every four to six hours. Well, my friend started taking his medications every four hours. Since nothing adverse happened, he decided every three-and-a-half hours would be OK.

As he went around the squadron, he complained of difficulty sleeping, excessive perspiration, and increased heart rate. If you aren't familiar with the Physician's Desk Reference, I'll bring you up to speed. Those symptoms are classic of Sudafed overdosage.

Just hours before the flyoff, my friend went to the flight surgeon after taking a couple of hits of Afrin—you know, "just in case." He nearly blew out his eardrums trying to valsalva for the doc, but he did it. As an added measure, after the visit to medical and before the brief, he put a little Vicks VapoRub under each nostril. Sounds like a train wreck waiting to happen, doesn't it?

Everyone snickered during the brief, but no one intervened. Once airborne, the flight got in formation, with all four of the squadron jets desperately trying to remain VMC, despite the forming thunderclouds. Each new wave of weather changes was met with another climb and an increase in cabin altitude. Of course, my friend met each climb with trepidation: He knew he'd have to pass through all the pressure changes on the way down. Before descent, he took a couple of hits of Afrin, but still he developed a minor ear block on the approach into Whidbey.

The next morning was more of the same—more Sudafed and Afrin. The first leg was into Grand Forks AFB, then on to NAS Willow Grove. The descent was relatively painless, but the fun started on the takeoff after the gas-and-go. The air-conditioning turbine seized and cabin pressure rapidly spiked to ambient: about 20,000 feet. After limping back to Grand Forks

at Its Finest?

to troubleshoot, my friend was in pain—not intolerable but pain, nonetheless.

The next day, the crew limped the jet back to Whidbey. They flew two legs, and the highest they could go without cabin pressurization was 10,000 feet. Each ascent and descent was another sinus-crushing event.

You may think this story ends with a six-month down time and sinus surgery, but, fortunately, for my friend, he didn't do any permanent damage. He was down for two weeks, mostly of his own will, by not seeing the flight surgeon until he fully had recovered.

There is one good outcome to this story, my friend no longer self-medicates. He was fortunate, but you might not be.

LCdr. Hay flies with VAQ-139.

With friends like yours, you are going to need more friends because the others appear to be near suicidal. Why in heaven's name would they risk their lives by overdosing on a medication that can cause irregular heart rhythm and sometimes death? Compound that problem with a situation that overpressurizes an infected sinus or ear cavity. When changes in cabin pressure try to shove disease-causing bacteria into the circulation that connects to their small brain, you definitely have a good chance of needing another friend.

—Capt. Nick Webster is the staff flight surgeon at the Naval Safety Center.

P.S., I'm not flying with your friend.

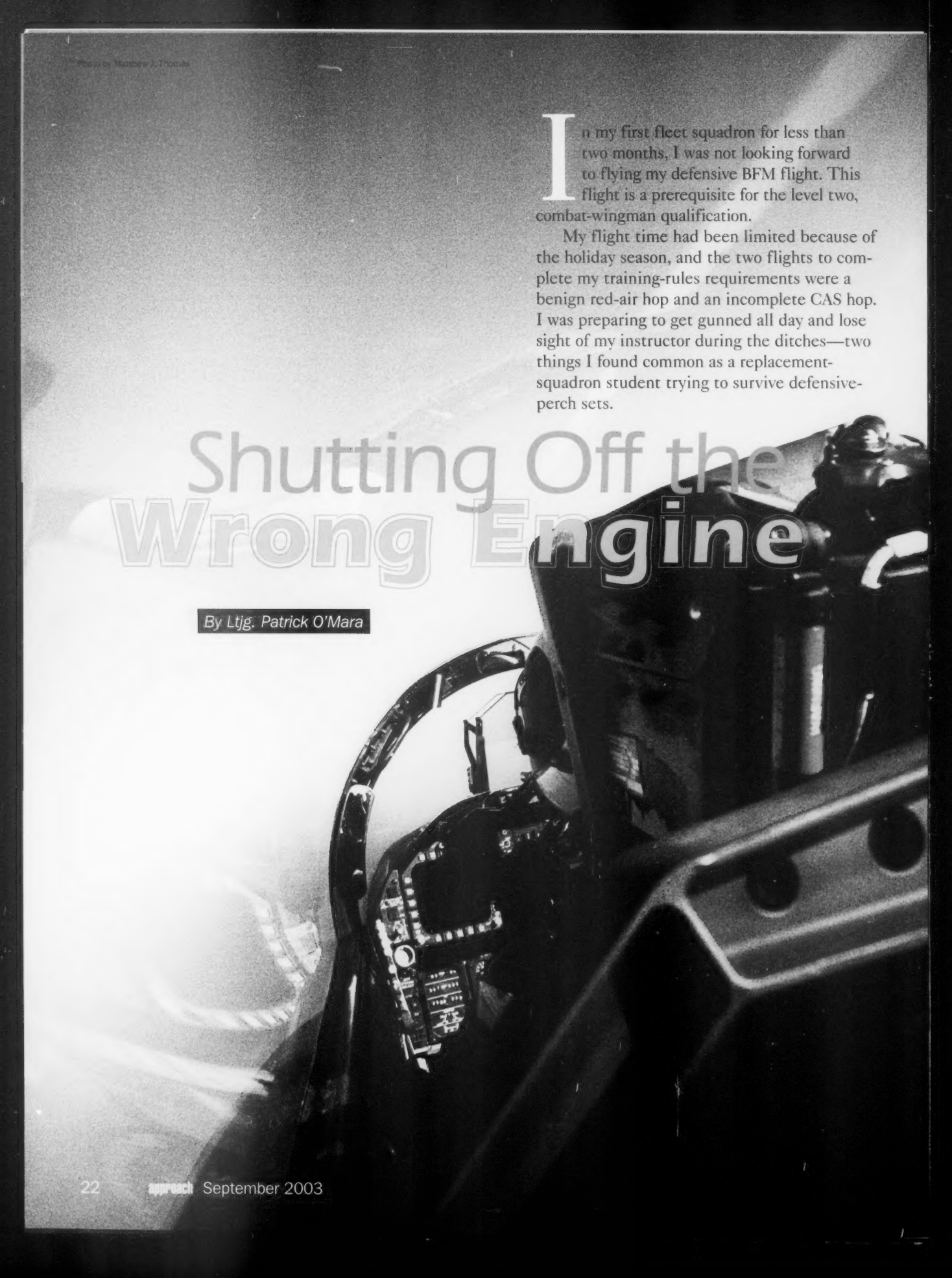
Photo by Matthew J. Thomas

Shutting Off the Wrong Engine

By Ltjg. Patrick O'Mara

In my first fleet squadron for less than two months, I was not looking forward to flying my defensive BFM flight. This flight is a prerequisite for the level two, combat-wingman qualification.

My flight time had been limited because of the holiday season, and the two flights to complete my training-rules requirements were a benign red-air hop and an incomplete CAS hop. I was preparing to get gunned all day and lose sight of my instructor during the ditches—two things I found common as a replacement-squadron student trying to survive defensive-perch sets.



The first half of the flight went as advertised, and we completed a snapshot drill, 9k and 6k sets. We set up for another 6k, and my bucket completely was full. I'd had an offensive-BFM flight a month before, but keeping sight then had been a lot easier. It took all my concentration to correctly move the jet and to react to my instructor at my six during the break turns and deck transitions. This was the first time I had kept sight the entire time—much better than reacting off of "zen" or hearing "pipper's on" from your instructor.

The second 6k began with a 7.1G break turn to the right. I performed a nose-low ditch, bottoming out at 10K, and then unloaded and rolled into another ditch. While 75 degrees nose low and looking above me at my flight lead, I heard the "deedle deedle" aural caution with "engine fire left, engine fire left." All I actually heard was the aural caution and engine fire. I knocked off the flight and pulled the jet back to the horizon, bottoming out at 8K.

I looked everywhere for a lit-up fire light, engine cautions, peculiar engine performance, or smoke from my plane. I looked for anything and everything as fast as I could. I needed to forget about BFM and remember NATOPS, both hard to do. To make things worse, I had no fire light to push, no strange engine parameters, no signs of a fire. I did have a left and right bleed-air-off caution but no bleed-air-warnings lights. What on earth was happening?

When I saw the right bleed-off, I was concerned I would be caught on the other side of the mountains from Lemoore without my hyd 2 system. I was unsure which engine I heard had the fire, and, without any other clues, I talked myself into assuming the worst. I might have to shut down my right engine and lose all my normal landing-gear hydraulics and braking system.

My flight lead asked which engine had the engine-fire-aural caution. Instead of telling him I was not sure, I told him I thought it was the right engine. We agreed I normally should drop the gear, then shut off the right engine. I made an uneventful, short-field, arrested landing at China Lake.

With the aircraft on deck, I turned my attention to figuring out what had happened. To my dismay, when I played my tape, I heard, clear as day, "Engine fire left." Maintenance inspected the aircraft and found nothing wrong.

It could have been a stray electron, but hearing only "engine fire left, engine fire left," and having the left and right bleeds turned off is exactly what happens when you engage the fire-warning-test switch. I'm left handed, and I keep my kneeboard on the left. So, it is possible my kneeboard or my hand could have hit the switch while moving the throttles. Many things happen during BFM; I still am not sure what caused the aural caution.

The boldface procedures for an in-flight fire in the Hornet include:

1. Throttles minimum practical for flight.

If single fire light or confirmed engine fire:

2. Throttle affected engine—off.
3. Fire light affected engine—push.
4. Fire extinguisher ready light—push.
5. Hook—down.

Knocking off the BFM, leveling off, and slowing down was an easy decision. However, because I had no fire lights or abnormal engine indications, and because my flight lead saw no signs of a fire, I should not have continued with the NATOPS-fire procedure. Even though I had heard the fire-aural caution, I should have observed every indication I had available to make a decision on what action to take.

The events did not follow anything I ever had seen before, and I never had thought about what would happen if the fire-warning-test switch was engaged in flight, especially during a BFM. The rule, "No fast hands in the cockpit," warns pilots to take time in moving things in the cockpit when following a procedure. It also should mean not making quick decisions, based on assumptions and incomplete facts. I shut off a perfectly good engine, taking away my normal braking system, which forced me to take a short-field arrestment—all because I kept the fire mindset. You must pay attention to everything, be ready for anything, and not make up what you think you saw or heard when you are not sure.

Ltjg. O'Mara flies with VFA-147.

Close Encounters of the SM1 Kind

By Ltjg. Matt Peters

The weather was sunny, and the seas were calm. What could go wrong on a day like this one?

We were one week into COMPTUEX, off the coast of Puerto Rico, and our ship successfully had launched two SM2 missiles. We set flight quarters for a passenger run to Naval Station Roosevelt Roads. When you're riding the shotgun cruiser in the battle group, an on-time launch isn't only a goal, it's a requirement.

As a landing-signal officer (LSO) under instruction, I took my place in the LSO shack and began running through the checklist. Everything went off without a hitch. As I was about to call the bridge for an amber deck to break down the aircraft, I received a call from the pilots, reporting they had automatic-flight-control-system (AFCS) problems. Before long, the communication net was full of people asking about the aircraft status. I gave them the standard, "Stand by, we have maintenance crews troubleshooting the problem" reply.

The ship's XO got on the line, and he didn't sound happy. He made it clear he wanted our aircraft "off his deck—now!"

Being new to the whole process, I prayed for a quick fix, so we could get the aircraft airborne without further incident. Fortunately, the problem was a minor one, and, just as I called the bridge for breakdown, the XO told us we had 30 seconds to get airborne or he was shutting us down.

I heard the ASTAC relay to the pilots they needed to turn to a heading of 235 degrees immediately after takeoff. Big red lights should have been blinding me, but, instead, I passed the XO's comment to the aircraft crew, which put even more pressure on them to go.

We were given a green deck for launch, and the takeoff was normal. After I got the ops normal from the helicopter crew, I thought I'd be able to rest easy—wrong!

I heard over the radio, "Venom, turn right, no left, immediately to a heading of 235 degrees."

Seconds later, the XO spoke to the pilots, restating the urgency of the turn. I asked myself what the #*@% was going on. After we got the aircraft on the correct heading, flight quarters was secured, and the XO told my LSO instructor and me that he wanted to see us immediately. Scratching our heads, we prepared for the worst.

Soon after we had completed the post-launch checklist, the XO met us on the flight

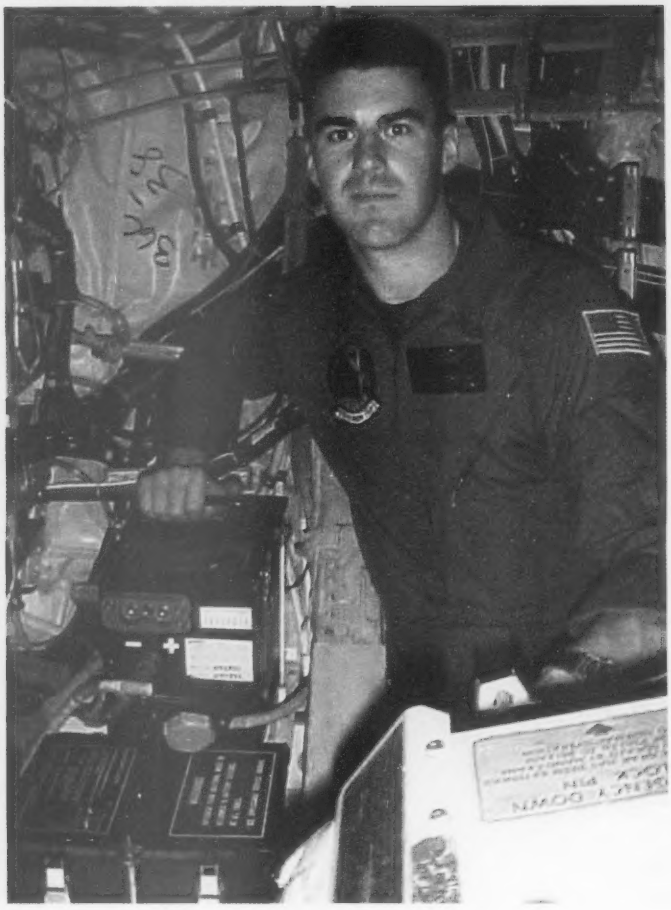
deck and told us we had come within three seconds of losing our aircraft to a missile. Little did we know, just a few miles away, another ship had prepared to launch an SM1 for their missile quals. Evidently, our aircraft flew directly into the ship's green-missile range—mere seconds before the button was to be pushed. Our captain, who was in charge of the entire exercise and who was watching the radars in combat, saw the bad situation developing and called for a fouled range.

Ask the right questions to gain total-situational awareness. If something doesn't feel right, odds are it probably isn't. I let myself get caught up in the perceived pressure to get the aircraft off the deck. Instead of taking a step back, I pushed a bad scenario even further. Aviators aren't the only ones who, at all costs, try to get out the event. The battle-group environment contains high stresses from all angles; communication is critical.

As pilots, we emphasize aircrew coordination so everyone is on the same page. I learned the hard way that aircrew and ship coordination is just as important. Our preflight brief with the ship's personnel should have been more thorough; it should have included a discussion about the missile exercise. Had I known what was going on, I would have kept the aircraft spinning on deck until the missile from our nearby playmate had left the rail. It's easy at times to become so focused on a task the big picture fades from view.

Ltjg. Peters flies with HSL-48 Det. 8.

Photo by AT1(AW/NAC) Derrik D. Anderson



Thermal RU

By AE2(AW/NAC) Brock Corcoran

Our crew was rather melancholy on the morning of Feb. 1, 2003, and not in the best of moods to fly. As aviators, we felt a kinship with the crew of the space shuttle Columbia. However, we were scheduled for a 10-hour, random-track mission, and our E-6B mission had to go.

As acting flight engineer (FE), I noticed an unusual battery-voltage indication midway through the flight. The emergency-lighting batteries were charging and discharging at a high rate. I monitored the battery indications while the crew completed scheduled training. When their training was completed, we headed to our destination. After reaching our cruise altitude of FL 330, I continued to watch the battery voltage. When it reached 24 volts, I felt more comfortable.

I had left my seat for only a few minutes when the navigator called the FEs to the flight deck. The navigator had smelled smoke, from an electrical source, and had asked us to investigate. I immediately checked the battery voltage and headed to the forward-lower lobe, where the emergency-lighting batteries are located. Joined

by an in-flight technician (IFT), as the required safety observer, I checked the lighting-battery charger. It was hot to the touch but not hot enough to cause the odor.

The next stop on our troubleshooting, and just a few feet forward, was at the emergency-lighting batteries. These batteries were the culprits—they were smoking, and the smoke was rising through the floor of the flight deck, right at the navigator's feet. Realizing the chemical reaction in the batteries, I quickly headed to the flight deck to tell the other FE and the two pilots.

Thermal runaway is an electrochemical reaction that causes a battery to heat and possibly explode. The seriousness of this situation, while airborne, is obvious: We needed to land as soon as possible.

The fire bill was initiated, and everyone, now knowing what the problem was, headed to the hatch for the forward-lower lobe with emergency equipment. After securing power to the system, I went to the forward-lower lobe where I met the IFTs. The pilots initiated a rapid descent, while we disconnected the batteries and prepared them for removal from the aircraft upon landing.

With the situation a little more under control, a fire watch was posted, while everyone else on the plane prepared for landing. The crew got out their flashlights because, in case of another emergency, the lighting batteries would not operate. I also discussed with the IFTs the plan to remove the batteries once on deck.

After landing, events moved faster than I had expected. Before I knew it, we had called for the ground-evacuation checklist. One IFT went straight to the ground from the forward-lower lobe to open the radio-access door and to take the batteries from me as I removed them. The batteries quickly were moved a safe distance from the aircraft.

I thought our job was done. Because I had seen and dealt with similar emergencies, I headed toward one of the crash trucks to help. The crash crew was not familiar with the procedures to neutralize batteries in a thermal-runaway condition. Remembering what the NA 17-15BAD-1 states, I instructed one of the firefighters to get a 55-gallon drum and to fill it with water, then submerge the batteries.

A total team effort contributed to the safe handling of this situation. After a few hours of maintenance, the aircraft was ready for its next mission.

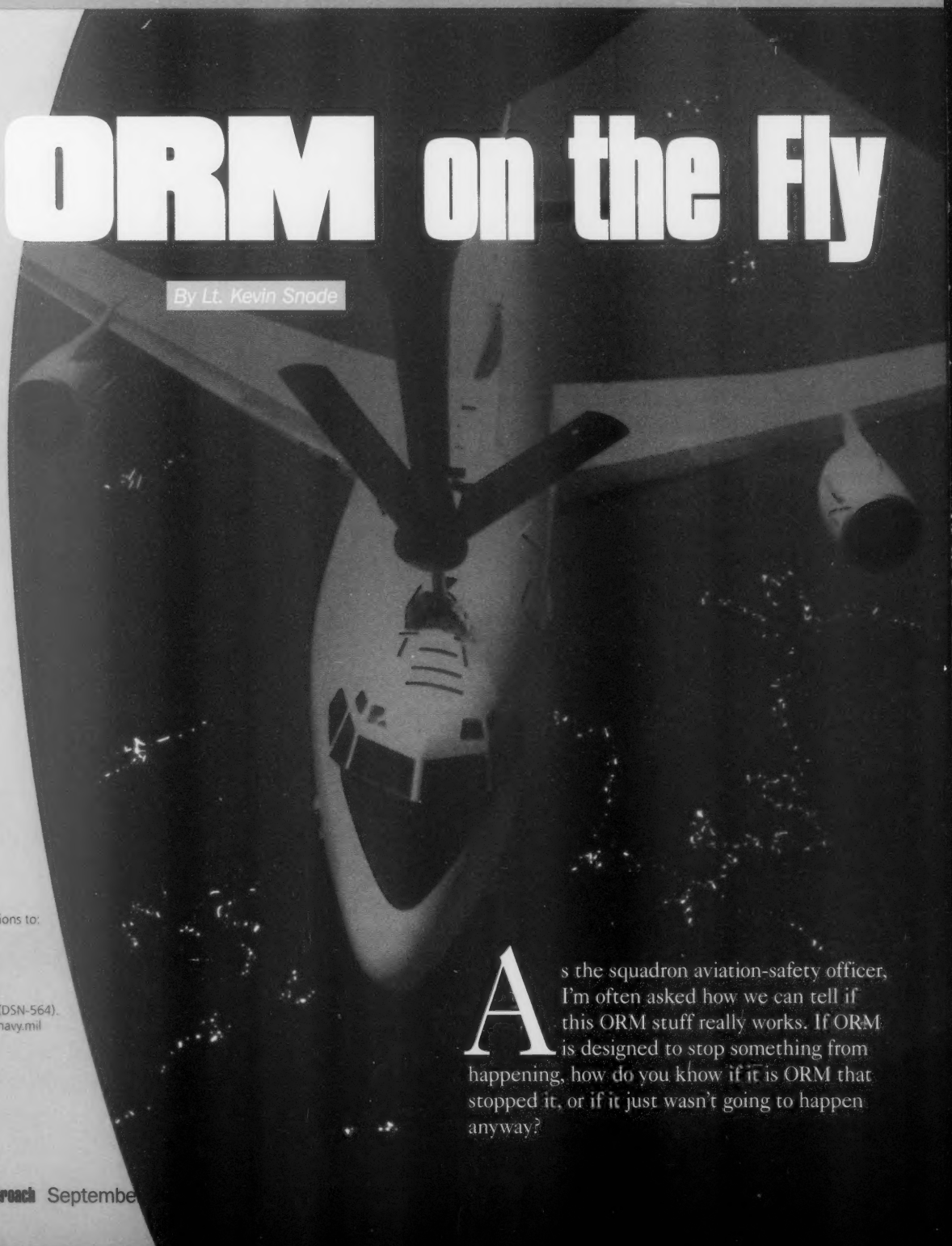
AE2(AW/NAC) Corcoran flies with VQ-4.

NAWAY

ORM Corner

ORM on the Fly

By Lt. Kevin Snode



As the squadron aviation-safety officer, I'm often asked how we can tell if this ORM stuff really works. If ORM is designed to stop something from happening, how do you know if it is ORM that stopped it, or if it just wasn't going to happen anyway?

ORM Corner

Please send your questions, comments or recommendations to:

Ted Wirginis, Code 11
Naval Safety Center,
375 A St.,
Norfolk, VA 23511-4399.
(757) 444-3520, ext. 7271 (DSN-564).
E-mail: theodore.wirginis@navy.mil

I don't know if I have the answers to satisfy those people. I usually talk about declining mishap rates, better situational awareness, and decreased numbers of skill-based errors. My favorite answer is, "You'll know it works when the person it saves is you," and then I tell this story.

We were in the middle of our E-6B community's be-all, end-all exercise, and our 14 crew members were fatigued. After two straight days of minimum crew rest, followed by 11- and 13-hour flights, we were ready for a good, long, uninterrupted sleep. Everything pointed toward getting our needed sleep as we walked from the plane that afternoon. But, at 0300 the next morning, we got the call. Still in a fog after being awakened from a sound sleep, we suddenly were in the air.

The first hour of the flight had light-to-moderate icing and turbulence, and everyone unsuccessfully tried to knock the cobwebs out of their heads with an emergency run on coffee. Then, the pilots got the next bit of good news: We had to air refuel with two KC-135s; the other crew we replaced couldn't do it.

Our track, which was just south of Wilmington, had weather only slightly better than the weather en route; part of the track was VMC, and the rest was IMC. The rendezvous was uneventful, despite the weather, and our AC requested the tanker to turn its anti-collision lights on so we could see them. We went IMC almost immediately after contact with the tanker. We then ran into unexpected turbulence, which caused the 2P to fall off the boom after only 6,000 pounds of fuel transfer. Five people were needed to regain sight of the tanker; they had turned off their beacon again. I guess the reflection off those pesky clouds was worse than the thought of hitting another plane.

The AC got the tanker crew to turn on their lights, and, as we joined up, their boom operator asked to turn off the tanker's auto-pilot to rebase their currency. We said we would consider it. Once in contact to get the rest of our onload, the same problems re-surfaced: IMC, turbulence, falling off the boom after 7,000 pounds of fuel.

As we went back for the rest of our 40,000-pound onload, I noticed something from my observer seat. The navigator was asleep, the flight engineer was doing touch-and-goes at his panel, and the pilots were task-saturated for the routine nature of what we were doing. It took only a second to finish this scenario in my head, and I didn't like the ending.

On the next rendezvous, the chain of events looked familiar, except I saw the lead tanker, one mile to our left, disappear into a bank of clouds just before contact. That was all it took. I told the AC to knock it off, drop to the bottom of the block, and we told the tanker, "Thank you very much"—before calling it a day.

Later in the flight, sitting on the flight deck, we joked about how tired everyone was, and the 2P laughingly said he couldn't even remember the first contact. We spent the next hour talking about on-the-fly ORM and how the requirements for the exercise never should become more important than our safety.

To those who ask whether ORM works and actually prevents the loss of airplanes and aircrew, I may not have all the statistics, or the right graphs to show, but if you had been there on the flight deck that night, you would have no doubts.

Lt. Snode flies with VQ-4.

Show and Tell

By Maj. R.C. Meade, USMC

Every *Approach* article seems to begin with, "It was a clear day," or "It was supposed to be an easy hop." In my case, it was both—which should have set off an alarm in my head.

Five years in the fleet had earned me a good-deal tour in Pensacola. After completing ground training, I was scheduled for my first hop at the flight-instructor-training unit. I hadn't touched the controls of a T-34C in six and a half years, and I wondered how quickly my skills would return.

The flight was supposed to be a low-stress, show-and-tell hop. I was paired with Steve, a fellow Marine captain and experienced instructor pilot. We ran through a quick NATOPS brief, preflighted, and did the checklist. Positioning

the aircraft on the runway, we set 500-foot-pounds torque, took one last look at the gauges, and started our takeoff roll. As the aircraft cleared the deck, we checked the fuel cap on each wing for streaming fuel. Although we saw a small amount of clear fluid coming from both caps, we weren't concerned. During preflight, Steve had pointed out water had collected in the caps during the previous night's rainstorm. We expected some fluid, mixed with residual fuel, to seep from the cap. We retracted the gear and began our climb to the working area.

Leveling off at 4,500 feet, en route to area 1, Steve asked if I smelled fuel vapors in the cockpit. I could detect a faint odor of JP-5 but wasn't sure how much was normal. The T-34 NATOPS mentions that transient-fuel vapors may be present in the cockpit, particularly after certain aerobatic maneuvers. Although our departure hardly qualified as aerobatic, we discussed our situation and decided, if the smell persisted, we would don our oxygen masks and head back to Whiting Field. The fumes went away after a few minutes, and Steve continued his tour of the outbound-course rules.

We just had canceled radar advisories and were heading toward the working area when the fuel fumes returned. The smell was mild but persistent, so we opted to head home.

We donned our oxygen masks and followed the procedures for streaming fuel. After reciting the memory items, I pulled out my pocket checklist and went through the items step by step. The second step states, time permitting, electrical power to both wings should be secured by pulling a series of circuit breakers. While the pilot radioed Pensacola Approach and declared an emergency, I continued to pull circuit breakers, securing power to the affected items. As Steve set up the aircraft for the emergency-landing pattern, I began the procedure for manually extending the gear. Reaching for the landing gear, power-and-control circuit breakers, I saw the entire panel was covered with fluid. I looked down at the map case and realized all the electronics on the right sub panel were sprayed with the same clear liquid.

Doing my best to sound calm, I keyed the ICS and said, "Uh, Steve, the circuit-breaker panel and all the electronic gear are covered with something...I think it might be fuel."

I hoped it was condensation from the air conditioner, but, to make sure, I wiped a gloved hand along the map case and lifted it to my face to check. When I broke the seal on my mask, I nearly gagged on the fuel fumes.

"Yeah Steve, it's definitely fuel," I called.

I pulled the appropriate breakers, put down the gear handle, engaged the clutch knob, and began cranking.

After 42 turns, the gear-extension handle stopped abruptly. As I turned to check the gear-position indicator, my stomach sank—three barber poles. From the rear cockpit, I heard my copilot exhorting me, "Keep going...the gear still isn't down."

I looked in the mirrors and told him, "That's it, the handle won't budge."

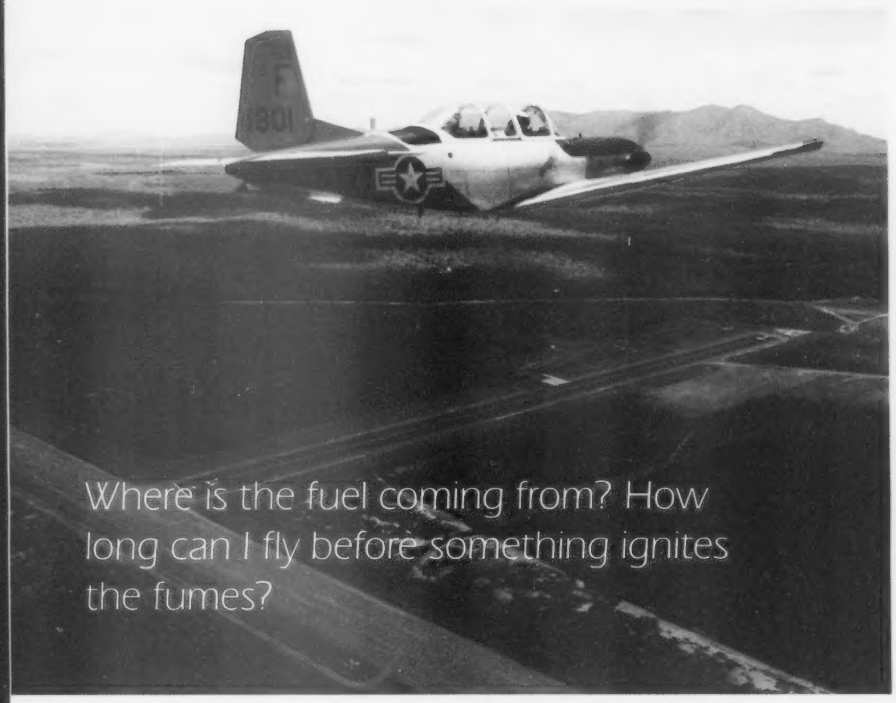
I looked back and saw Steve shaking his head, as he muttered over the ICS, "This just isn't my day."

After telling tower of our unsafe-gear indication, we headed for the overhead pattern to sort out our problem.

Imagine, orbiting overhead with an emergency that tells you to land as soon as possible, with fuel coating the cockpit and sloshing around under your seat. You also have three unsafe-gear indicators, and you're wearing an oxygen mask to keep from being overcome by fuel vapors. What are your choices? Gear-up landing? Point the plane in a safe direction, and get out?

More questions popped into my head. Where is the fuel coming from? How long can I fly before something ignites the fumes? Did I miss a step in the procedure? Is this a gear-indicating problem, or is this really an unsafe gear? Why didn't I stay in the fleet?

As Steve focused on flying and coordinating a visual inspection of the gear, I ran through the procedures in my mind. Step one, permissible exposure level—no questions there. Step two, time permitting, secure electrical power to the wing. Hmm, what circuit-breakers did I pull? AOA probe, nav and strobe lights, gear-indicating



system. With a quick "Aha," I told my copilot I thought I had solved the mystery. Although I wasn't wild about resetting a circuit breaker on a panel covered with jet fuel, I equally was uninterested in hanging out for a visual inspection. After closing my eyes and turning my head away, I gently nudged the breaker back into place.

Thankfully, there was no explosion, and I instantly was rewarded with "three down and locked." Steve reintercepted the emergency-landing profile, and we were on the ground in no time. As the aircraft stopped, we completed an emergency shutdown. The crash crew came and signaled frantically for an engine shutdown. As I exited the cockpit, fuel ran out of the nose compartment, and the underside of the aircraft was coated in JP-5.

A bucket was placed under the nose to catch the leaking fuel, and, once everything was safe, we had our first look at the problem. Streaming fuel in the T-34 usually occurs when a fuel cap isn't seated properly, but this case was different. The fuel filter on the engine-driven fuel pump wasn't reinstalled properly after maintenance. Instead of being torqued to a specific value and safety wired into place, the filter only was hand-tightened. This situation created an eighth-inch gap between the filter and the pump. At full power, the pump operates at 800 psi, pushing a lot of fuel out of the system in a short time.

Here are the three lessons I took away from this experience:

- There is no such thing as an easy hop. Disaster is lurking around every corner, so expect it.
- Dealing with mild or intermittent indicators is a bit like dealing with substance abuse. Acknowledging you have a problem is the first step to getting better.
- Knowing your procedures isn't enough. We executed every step in accordance with NATOPS, but it was calm heads and solid understanding of systems that prevented this problem from getting worse.

Maj. Meade is currently with MAG-26.

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Check out the Photo of the Week at
http:/safetycenter.navy.mil/photo/default.htm

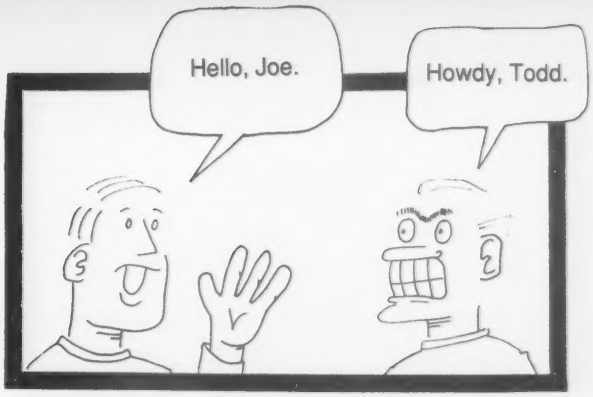
Classic

BROWNSHOES IN ACTION COMIX

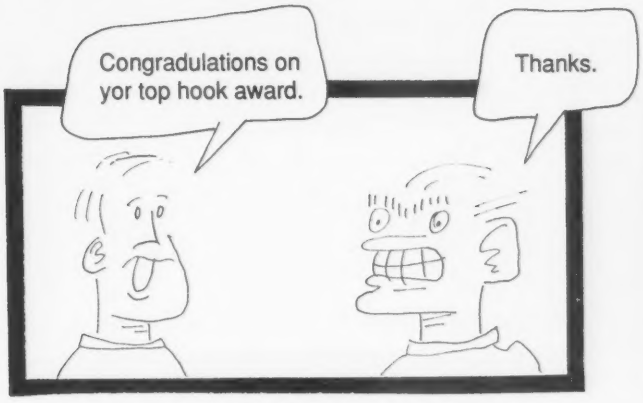
"The kind real aviators like"

By Lt. Ward Carroll

The aircraft mishap investigation team reconstructs a cartoonist's ground mishap.



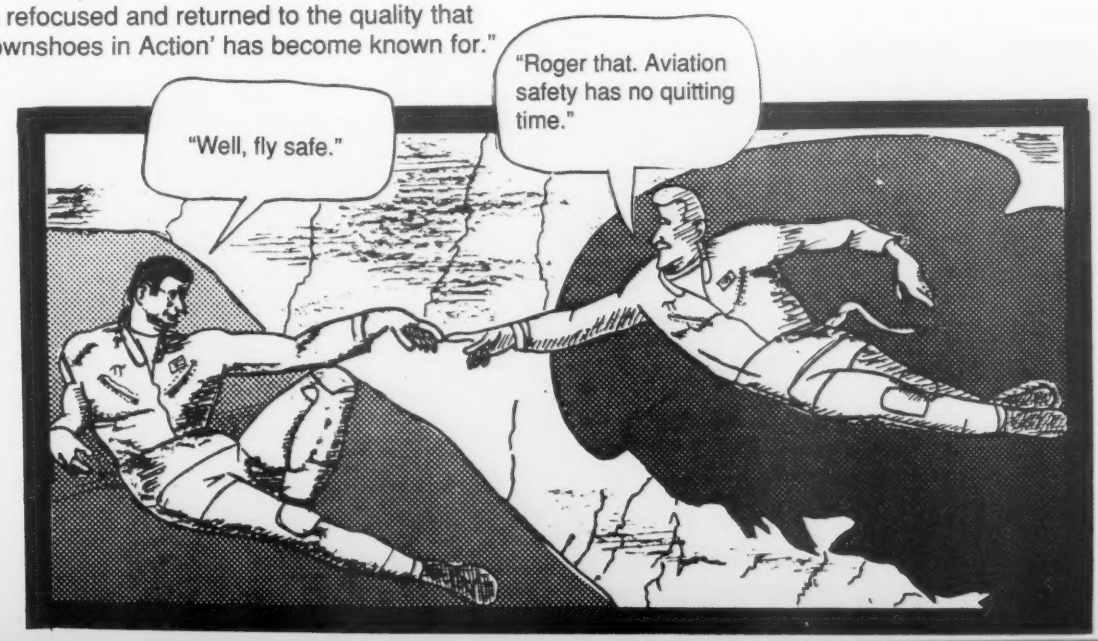
"Here we see the first signs of trouble. Inaccurate detail in the artwork and the plain-vanilla dialogue can only mean one thing: The cartoonist has become complacent."



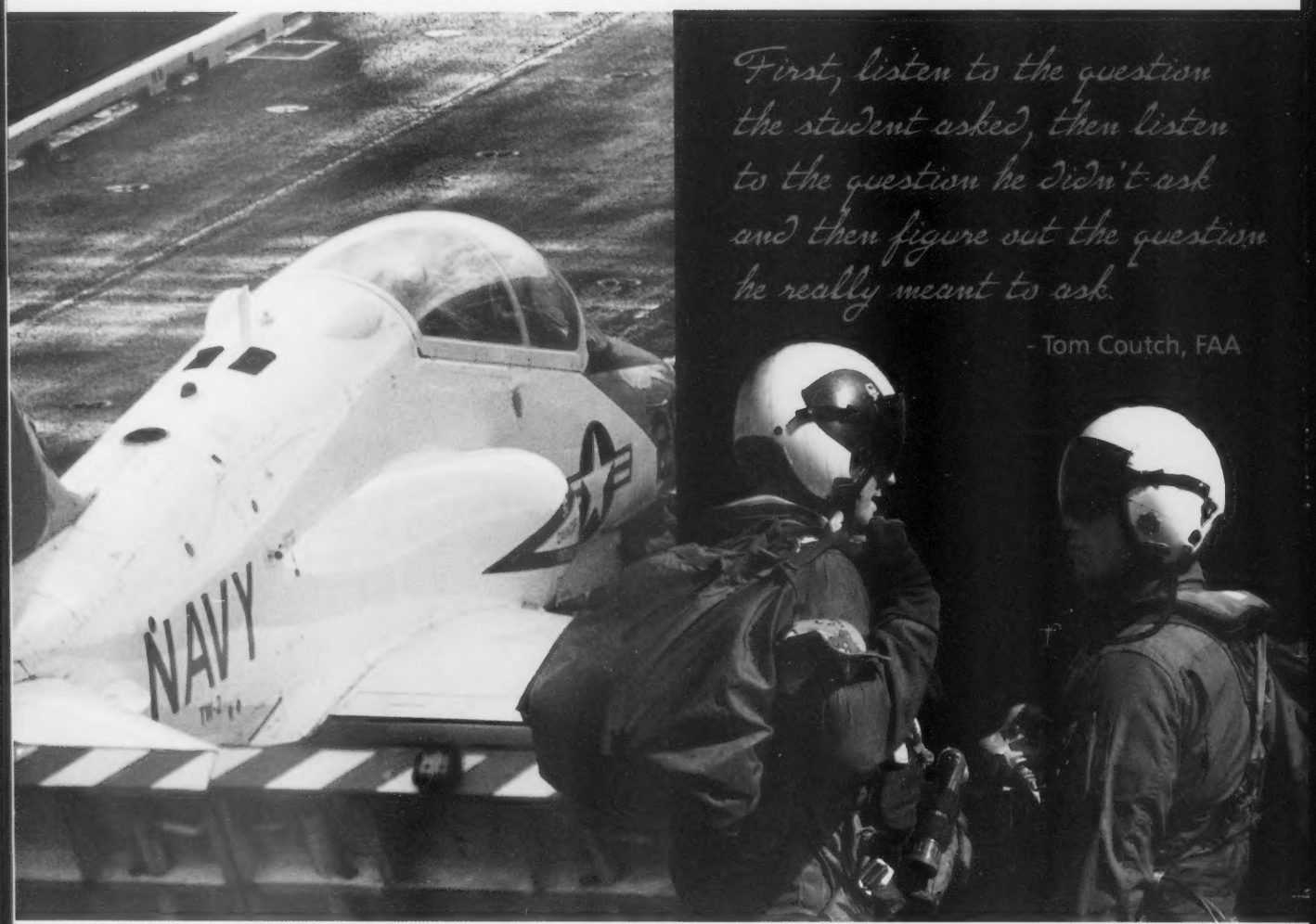
"At this point, the hurried sketches and misspellings indicate a bad case of get-home-itis."

"Then disaster struck. Fortunately, the cartoonist's trousers cost well under $10,000, and the mishap was not reportable."

"After a personal standdown, the cartoonist has refocused and returned to the quality that 'Brownshoes in Action' has become known for."



Ready Room Gouge



First, listen to the question the student asked, then listen to the question he didn't ask and then figure out the question he really meant to ask.

- Tom Coutch, FAA

Photos by PH3 Brian C. Mclaughlin and PH2 Darryl I. Wood

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